

What is claimed is:

1. A method for transmitting data to a mobile device, comprising:  
receiving location data from the mobile device; and  
encapsulating a data packet in an encapsulation packet, the encapsulation packet having a destination address corresponding to the location data;  
determining at least a portion of a network path to the device based on the location data;  
decapsulating the encapsulated data packet at a network switch; and  
transmitting the data packet to the mobile device.

2. The method according to Claim 1, further comprising the steps of:  
storing a first mapping between a unicast address of the mobile device and the location data corresponding to the device;  
receiving a data packet from a terminal, the data packet including the destination address of the mobile device; and  
using the first mapping to determine the location data of the device based on the destination address of the device.

3. The method according to Claim 1, wherein the location data is comprised of a routing domain.

1           4.     The method according to Claim 1, wherein the location data is  
2 comprised of global positioning data.

1           5.     The method according to Claim 2, wherein the determining function  
2 comprises evaluating a second mapping, the second mapping having the location  
3 data corresponding to the device and a respective multicast address to be used as  
the destination address of the encapsulation packet.

6           6.     The method according to Claim 5, wherein the location data is  
comprised of a routing domain.

7           7.     The method according to Claim 2, wherein the determining function  
comprises:

3           storing a second mapping, the second mapping having a location data range  
4 corresponding to network switches supporting a respective coverage zone and at  
5 least one communication interface to be used to transmit the encapsulation packet;  
6 and

7           evaluating the second mapping to determine the at least one communication  
8 interface to be used to transmit the encapsulation packet based on the location data  
9 range which includes the location data.

1           8.     The method according to Claim 7, wherein the location data range is  
2 a range of global positioning coordinates and the location data includes global  
3 positioning data.

1           9.     A system for transmitting data across a communication network  
2 from a terminal to a mobile device, the system comprising:

3           at least one first router having at least one communication interface, the at  
4 least one communication interface receiving location data from the mobile device;  
5 and

6           at least one second router having:

7           at least one communication interface, the at least one communication  
8 interface receiving the location data from the at least one first router and receiving  
9 a data packet from the terminal, the data packet including a unicast address of the  
10 mobile device; and

11           a central processing unit, the central processing unit executing  
12 functions including:

13           determining at least a portion of a network path to the device  
14 based on the location data; and

15 using the portion of the determined network path to send, via  
16 the at least one communication interface, the data packet to the at least one first  
17 router which received the location data from the device.

1 10. The system according to Claim 9, wherein the at least one second  
2 router further comprises a storage unit and wherein the central processing unit  
3 further executes a function including storing a first mapping in the storage unit  
4 between the unicast address corresponding to the mobile device and the location  
5 data corresponding to the device.

6 11. The system according to Claim 9, wherein the location data is  
7 comprised of a routing domain.

8 12. The system according to Claim 9, wherein the location data is  
9 comprised of global positioning data.

1 13. The system according to Claim 9, further comprising a location  
2 updating unit, the location updating unit receiving the location data from the at  
3 least one first router and transmitting the location data to the at least one second  
4 router.

1           14. The system according to Claim 10, wherein the central processing  
2 unit in the at least one second router further executes a function including  
3 encapsulating the data packet in an encapsulation packet, and wherein the at least  
4 one first router decapsulates the data packet.

1           15. The system according to Claim 14, wherein the determining function  
2 is comprised of retrieving a second mapping from the storage unit, the second  
3 mapping having the location data corresponding to the device and a respective  
4 multicast address interface to be used as the destination address of the  
5 encapsulated packet.  
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1           16. The system according to Claim 15, wherein the location data is  
2 comprised of a routing domain.  
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1           17. The system according to Claim 10, wherein the storage unit stores a  
2 second mapping, the second mapping having a location data range corresponding  
3 to a coverage zone for a respective first router and at least one corresponding  
4 communication interface on the second router to be used to transmit the  
5 encapsulation packet, and wherein the determining function includes evaluating  
6 the second mapping to determine the at least one communication interface to be

7 used to transmit the encapsulation packet based on the location data range which  
8 includes the location data.

1 18. The system according to Claim 17, wherein the location data range is  
2 a range of global positioning coordinates and the location data includes global  
3 positioning data.

4 19. A network switch for a communication network in which the  
5 network switch facilitates communication between a device and a terminal  
6 coupled to the communication network, the network switch comprising:  
7

8 at least one communication interface, the at least one communication  
9 interface receiving location data corresponding to the device and receiving a data  
10 packet from the terminal, the data packet including a destination unicast address of  
11 the device; and  
12

13 a central processing unit, the central processing unit executing functions  
including:

determining at least a portion of a network path to the device based  
on the location data; and

using the portion of the determined network path to send, via the at  
least one communication interface, the data packet to the device.

1           20.    The network switch according to Claim 19, further comprising a  
2 storage unit, wherein the central processing unit further executes a function  
3 including storing a first mapping in the storage unit between the destination  
4 unicast address corresponding to the device and the location data corresponding to  
5 the device.

1           21.    The network switch according to Claim 19, wherein the location  
2 data is comprised of a routing domain.  
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1           22.    The network switch according to Claim 19, wherein the location  
2 data is comprised of global positioning data.  
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1           23.    The network switch according to Claim 20, wherein the central  
2 processing unit further executes a function including encapsulating the data packet  
3 in an encapsulation packet.  
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1           24.    The network switch according to Claim 23, wherein the determining  
2 function is comprised of retrieving a second mapping from the storage unit, the  
3 second mapping having the location data corresponding to the device and a  
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4        respective multicast address to be used as the destination address of the  
5        encapsulation packet.

1                25.    The network switch according to Claim 24, wherein the location  
2        data is comprised of a routing domain.

1                26.    The network switch according to Claim 20, wherein the storage unit  
2        stores a second mapping, the second mapping having a location data range for a  
3        coverage zone and at least one corresponding communication interface to be used  
4        to transmit the encapsulation packet, and wherein the determining function  
5        includes evaluating the second mapping to determine the at least one  
6        communication interface to be used to transmit the encapsulation packet based on  
7        the location data range which includes the location data.

1                27.    The network switch according to Claim 26, wherein the location  
2        data range is a range of global positioning coordinates and the location data  
3        includes global positioning data.

1                28.    The network switch according to Claim 19, wherein the data packet  
2        includes streaming data.